SWE assimilation - output ...

gdlannoy 4 posts since

Apr 29, 2008 Dear LIS-team

Could anyone explain why the snow-related output variables for the Noah LSM are chosen to be noah_struc%noah%swe and noah_struc%noah%snowh, while in fact the updated state variables after SWE-assimilation are currently only noah_struc%noah%sneqv and noah_struc%noah%snowh?

I do not see how noah_struc%noah%swe is updated after DA and prior to writing out the analysis in the outputfile at the DA time steps, so I wonder if we really get a correct noah_struc%noah%swe-estimate at the DA time step.

Many thanks for your help!

Kind regards,

Gabriëlle Tags: lis, swe, noah

sujay *118 posts since*
Sep 20, 2007 1. **Re: SWE assimilation - output** Jun 1, 2008 8:07 PM

Hi Gabrielle,

The prognostic variables for snow depth and snow water equivalent are snowh and sneqv, respectively. In LIS we use a diagnostic variable called swe to keep track of SWE as well. swe and sneqv are essentially the same, except that swe can be used for looking at a time averaged value of snow water equivalent whereas sneqv will be an instantaneous value.

So, in assimilation, the update should be applied to the prognostic value (sneqv and snowh).

Hope this helps,

-S

gdlannoy *4 posts since*
Apr 29, 2008 2. **Re: SWE assimilation - output** Jun 2, 2008 12:12 AM

in response to: sujay

Dear Sujay

Right, but the instantaneous output to the binary files is ´swe´, which is at the instant of DA not updated (sneqv is updated).

I mean: right after the moment of DA, swe does not equal sneqv, so when swe is written as output, then it is not the actual updated state.

I guess my question/suggestion would better be as follows: should the snow variable passed through the output-procedure (binout to write the ´instantaneous ´ output-files) not be ´sneqv´ instead of ´swe´?

Many thanks!

Kind regards,

Gabriëlle

sujay *118 posts since*
Sep 20, 2007 3. **Re: SWE assimilation - output** Jun 2, 2008 9:59 AM

in response to: gdlannoy Gabrielle,

Yes. I see your point. Ultimately it is upto the user to figure out what variables are being output and how (time averaged/instantaneous, etc). You can easily modify the output to reflect the analysis increments being applied. The swe variable is created to give some flexibility in case someone wants to write a time averaged SWE output. Another fix would be to update the swe variable as well at the update step during assimilation - purely a diagnostic update since it will not affect the model simulations.

-S

gdlannoy *4 posts since*
Apr 29, 2008 4. **Re: SWE assimilation - output** Jun 2, 2008 10:02 AM

in response to: sujay

OK, thank you, Sujay!

Gabriëlle